We claim:

1. A radiation-emitting semiconductor component having a layer structure, comprising:

an n-doped cladding layer (18),

a p-doped cladding layer (20),

an active layer (14) based on InGaAlP arranged between the n-doped cladding layer (18) and the p-doped cladding layer (20), and

a diffusion stop layer (16) arranged between the active layer (14) and the p-doped cladding layer (20),

wherein the diffusion stop layer (16) has a strained superlattice.

2. The radiation-emitting semiconductor component as claimed in claim 1, wherein the diffusion stop layer (16) has a superlattice which is alternately tensile/compressively strained.

3. The radiation-emitting semiconductor component as claimed in claim 2, wherein the superlattice of the diffusion stop layer (16) has N periods of tensile-strained $In_x(Ga_yAl_{1-y})_{1-x}P$ layers (16a), where $0 \leq x \leq 1$, $0 \leq y \leq 1$, and compressively strained $In_x(Ga_yAl_{1-y})_{1-x}P$ layers (16b), where $0 \leq x \leq 1$, $0 \leq y \leq 1$, N lying between 2 and 40, preferably between 5 and 20, particularly preferably between 8 and 15.

4. The radiation-emitting semiconductor component as claimed in claim 3, wherein the superlattice of the diffusion stop layer (16) consists of InAlP layers.

5. The radiation-emitting semiconductor component as claimed in claim 1, wherein

the strain lies in the range of 0.1% to 5%, preferably in the range of 0.5% to 2%, particularly preferably in the range of 0.7% to 1%.

6. The radiation-emitting semiconductor component as claimed in claim 1, wherein
the p-doped cladding layer (20) is p-doped with magnesium.

7. The radiation-emitting semiconductor component as claimed in claim 1, wherein
the diffusion stop layer (16) is highly n-doped.

8. The radiation-emitting semiconductor component as claimed in claim 7, wherein
the diffusion stop layer (16) is n-doped with tellurium.

9. The radiation-emitting semiconductor component as claimed in claim 7, wherein
the n-type dopant concentration lies above 0.5×10^{18} cm^{-3}, in particular between them and including 0.75 and up to and including 1.5×10^{18} cm^{-3}.

10. The radiation-emitting semiconductor component as claimed in claim 8, wherein
the n-type dopant concentration lies above 0.5×10^{18} cm^{-3}, in particular between 0.75×10^{18} cm^{-3} and 1.5×10^{18} cm^{-3} (limits included).

11. The radiation-emitting semiconductor component as claimed in claim 1, wherein
a transparent coupling-out layer (22), which preferably essentially consists of GaP, is arranged on the topmost cladding layer (20) of the layer structure.

12. The radiation-emitting semiconductor component as claimed in claim 1,

wherein

the active layer (14) comprises a p-n junction, a single quantum well structure or a multiple quantum well structure.

13. The radiation-emitting semiconductor component as claimed in claim 2,

wherein

the strain lies in the range of 0.1% to 5%, preferably in the range of 0.5% to 2%, particularly preferably in the range of 0.7% to 1%.

14. The radiation-emitting semiconductor component as claimed in claim 3,

wherein

the strain lies in the range of 0.1% to 5%, preferably in the range of 0.5% to 2%, particularly preferably in the range of 0.7% to 1%.

15. The radiation-emitting semiconductor component as claimed in claim 4,

wherein

the strain lies in the range of 0.1% to 5%, preferably in the range of 0.5% to 2%, particularly preferably in the range of 0.7% to 1%.

16. The radiation-emitting semiconductor component as claimed in claim 3,

wherein

a transparent coupling-out layer (22), which preferably essentially consists of GaP, is arranged on the topmost cladding layer (20) of the layer structure.

17. The radiation-emitting semiconductor component as claimed in claim 4,

wherein

a transparent coupling-out layer (22), which preferably essentially consists of GaP, is arranged on the topmost cladding layer (20) of the layer structure.

18. The radiation-emitting semiconductor component as claimed in claim 3, wherein the diffusion stop layer (16) is highly n-doped.

19. The radiation-emitting semiconductor component as claimed in claim 4, wherein the diffusion stop layer (16) is highly n-doped.

20. The radiation-emitting semiconductor component as claimed in claim 19, wherein the diffusion stop layer (16) is highly n-doped.